

ABSTRACT

5 A downhole device processes particles entrained in a drilling fluid
returning up a wellbore. In one embodiment, the device includes a housing
having at least one cutting surface formed in a chamber of a housing. A cutting
head disposed in the chamber crushes or comminutes the particles entrained in
the drilling fluid to a predetermined size. The device is disposed in the wellbore
10 and processes the entrained particles before they enter a selected wellbore
device such as a pump. In certain embodiments, the housing has at least two
chambers, wherein the entrained particles are reduced to a first predetermined
size in the first chamber, a second predetermined size in the second chamber,
etc. Also, the housing can include an operator that generates an energy field
15 that reduces the size of the particles entrained in the drilling fluid to a first
predetermined size when the particles flow through the energy field.